

JANUARY 1996

HP Professional

Data Warehousing

OLAP Rewrites The Book

INDUSTRY WATCH

- ◆ HP's 32-Bit OS Conclusions
- ◆ Taligent's Untimely Demise
- ◆ HP & AT&T Get Interactive
- ◆ HP's Client-Server Trade-Up

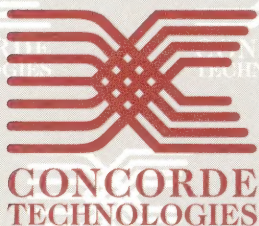
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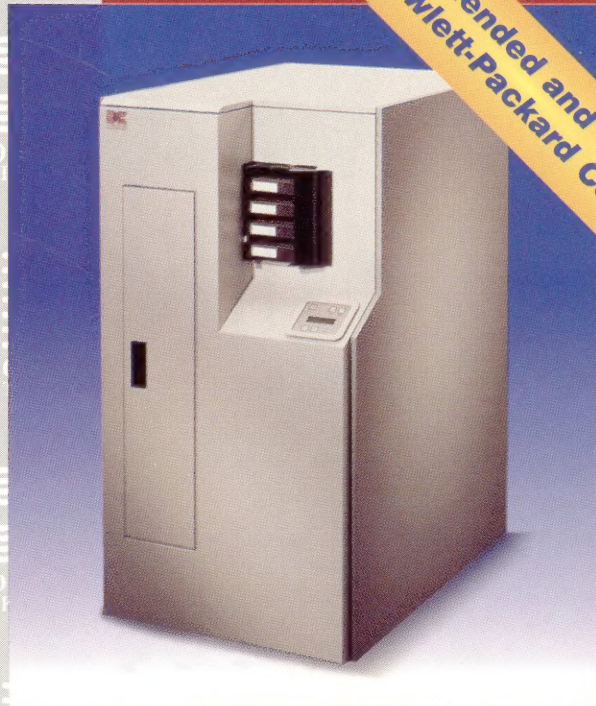
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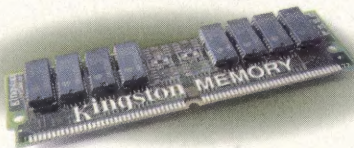
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As so-called knowledge workers dive into the deep end of the data pool, everyone's shouting about meaningful corporate information. But you can't do much except tread water, unless you know how to manage and synchronize two kinds of databases. You can do it yourself with the right tools or you can avail yourself of HP's OpenWarehouse program.

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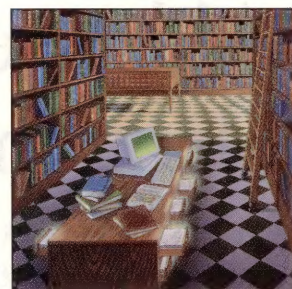
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By John R. Logan

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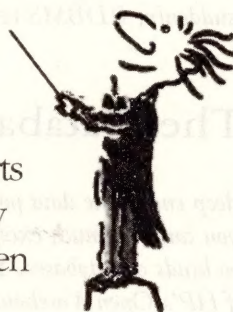
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The Industry By The Numbers

HP had a great year in 1995. First, the company finished with a flourish racking up a 29 percent growth in revenue, a 27 percent increase in orders and a 42 percent growth in net earnings in their fourth quarter which ended October 31, 1995. And after the smoke cleared, HP reported \$31.5 billion in revenue, a 26 percent increase over last year. Net earnings for the quarter were \$678 million, or \$1.29 per share.

And that's not all: orders for the quarter totaled \$8.8 billion, an increase of 27 percent over the same period a year ago. U.S. orders grew 26 percent to \$4.3 billion, while orders from outside the United States increased 29 percent to \$4.5 billion. It was good enough for many stock analysts to quickly put HP on their "buy" lists. That's what Donald, Lufkin & Jenrette did; and they raised their earnings estimates for HP from \$5.50 from \$5.25 for fiscal year 1996.

But how does that compare with the industry as a whole? Is HP alone in its good fortune? Or is this an industrywide trend? Sun Microsystems, HP's arch rival in the UNIX market, reported 1995 fiscal year (June 30, 1995) revenues of \$5.9 billion and earnings of \$355.8 million. But Sun's holding a hot hand with Java, its Internet scripting language. Endorsed by Netscape, IBM and Microsoft no less, Sun thinks it's finally broken Microsoft's grip on the industry. Interestingly, Sun reported 45 percent of their revenues came from VARs and distributors; with 40 percent from direct sales and 15 percent through OEMs. In addition, 51 percent of all revenues came from the United States and 24 percent from Europe, with the remaining 25 percent coming from the rest of the world.

Digital Equipment, today a not-so significant HP competitor, reported \$48 million in net income for their first quarter 1996, having finally made the turn around the company so desperately needed for the past three years. The company reported Alpha sales up 40 percent with over 125,000 systems shipped to date, along with a projected 200,000 Alpha systems running Windows NT in 1996. And Digital stock was up to \$53.63 at the time of this writing. That's a three year high. Digital, now employing about 65,000 people worldwide has \$1.5 billion in cash. A culture change at Digital includes a "channel network" that produces 60 percent of Digital's sales revenues.

IBM, which gives Lew Platt "no great comfort," acquired Lotus Development Corp. last year. It cost them \$1.8 billion on the bottom line in their third quarter. So, IBM posted a loss of \$538 million, or \$.96 per common share, in the third quarter. Third-quarter revenues totaled \$16.8 billion, a modest increase of 9 percent from the same period of 1994. Third quarter earnings were \$1.3 billion, or \$2.30 per common share. Overall software revenues were \$3.1 billion, an increase of 14 percent, while services revenues grew 36 percent to \$3.1 billion. Personal computer sales increased, while AS/400 revenues declined. And mainframe revenues continued to fall.

So, although all the numbers weren't stellar, this quick look at last year and a peek at the year to come indicate that 1996 will be a good year for all, and that the computer industry as a whole is still one of the strongest and steadily growing industries. Some of the emerging business areas that computer manufacturers will target in 1996 include traditional favorites like healthcare, and the gas and oil industries, as well as a big drive toward exploiting the Internet.

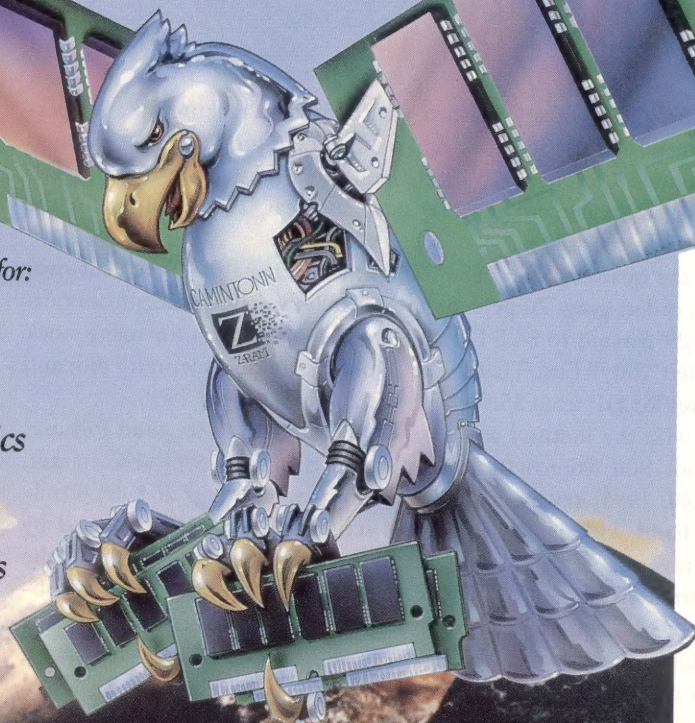


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INDUSTRY WATCH

George A. Thompson

SHOULD AULD ACQUAINTANCE AND \$400 MILLION BE FORGOT?

In the case of Taligent Inc. (Cupertino, Calif.), it appears so. Taligent, the joint venture formed by Apple Computer, IBM and later joined by HP, was in the process of quietly negotiating its own demise in early December. Founded in 1991, Taligent was charged with the noble mission to build an object-oriented (OO) operating system and so-called "OO frameworks."

After spending a combined \$400 million in R&D over the past several years, Taligent was finally on the verge of delivering a product called CommonPoint, an OO framework based on C++. At the time of this writing, despite a report to the contrary, discussions regarding Taligent's future were "on-going" with no official announcement having been made.

The Wall Street Journal reported, however, that IBM will keep ownership of the Taligent technology while Apple and HP retain the rights to license the technology. According to an HP spokesperson, "HP, with 10 years of experience internally and with outside partners, remains committed to object-oriented technology." HP took a 15 percent stake in Taligent early last year.

In a related development, Kaledia Labs, an IBM and Apple joint venture to develop a cross-platform multimedia standard was disbanded in November. Apple will continue the development, which was once part of an internal but widely publicized Apple project code-named "Pink." IBM will retain the rights to use the technology. ●

AND NEVER BROUGHT TO AT&T'S INTERACTIVE MIND

Taligent's ultimate demise didn't stop HP from beginning a new relationship

with AT&T Network Systems (Morestown, N.J.). But perhaps just a bit cautiously, HP and AT&T Network Systems (by now a separate division of AT&T Corp.) signed only a memorandum of understanding (MOU) to "jointly explore new kinds of public and private wireless and wired networks that make the delivery of multimedia information and interactive services more cost-effective and reliable."

With 1.8 million U.S. homes expected to have interactive television services in place sometime in 1996, HP and AT&T Network Systems, in conjunction with the RBOCs' cable TV companies, as well as other communications and computing industry players, plan to create a broadband interactive data architecture and network to provide Internet access, home shopping, telecommuting, interactive games personal audio channels virtual communities, distance learning, interactive advertising and telemedicine.

According to Dataquest (San Jose, Calif.) the worldwide interactive television market will grow to \$1 billion by 1997. HP's Video Communication Division has already signed agreements to supply its MediaStream video server to Pacific Telesis of California, BellSouth of Georgia and Southern New England Telephone of Connecticut for use in their interactive TV trials. Worldwide, HP has agreements to supply its MediaServer to Hong Kong's Hongkong Telecom and Germany's Deutsche Telekom in their interactive television projects. ●

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AER Energy Resources (Smyrna, Ga.) is shipping the PowerSlice LX (\$399), a rechargeable zinc-air battery for HP's OmniBook 600 Series of notebook computers.

Attaching underneath an OmniBook,

the AER Energy battery can last for up to 12 continuous hours between charges. The PowerSlice LX will be sold through PC Compleat, MicroSYSTEMS Warehouse, PC Connections, Power Express and FEDCO. ●

**TRICKS OF THE TRADE-UP**

Starting this past December, HP's Personal Information Products Group (PPG) launched the HP Client-Server Trade-Up Program. HP will apply the trade-in value of any brand of PC desktop or PC server toward the purchase of HP's Intel-based Vectra desktops and NetServer servers. HP, Compaq, IBM, DEC, Dell, AST, Toshiba, Apple and other brands of PCs and servers will be accepted. Customers also may trade in old UPSs for the new HP PowerWise UPS. All HP PowerWise UPS solutions come with a two-year Express Exchange warranty. HP will de-install and package old equipment and pay for shipping.

Customers wishing to trade in their existing systems for new HP systems may call (800) HP-00012 for details and trade-in prices. Or you can get the information via fax at (800) 333-1917. The program is available in the United States and Canada through April 30, 1996. ●

DEALING WITH DESKTOPS

This past December, in a move to "leverage the reseller service channel,"

HP announced that it was adopting a new business model for its multivendor (read client-server) desktop hardware-maintenance business. This month, HP will begin testing the channel waters with a program that subcontracts on-site desktop and peripheral maintenance in the hands of capable HP resellers. HP is now seeking Requests for Proposal (RFP) from their largest resellers that have a broad geographic exposure. "If things go well, we will begin volume in February and it will roll out throughout this summer," according to Madge Whistler, Hardware Support Alliances manager, for HP's multivendor service division, a sub-unit of HP's Worldwide Customer Support Organization (WSCO).

But she stresses, "We are not subcontracting HP 9000 and HP 3000 ser-

vice. This refers only to our HP Vectra desktop clients, other non-HP brands of PCs and related peripherals like LaserJet or DeskJet printers." For example, she explains, "say a client-server customer has a combination of HP 9000s, HP Vectra PCs as well as another brand of PC; they are also very likely to have some LaserJets too. So the HP 9000 service continues with our own HP workforce, but the *on-site repair*, will be a [channel] reseller, sent out per our instructions, instead of an HP Certified Engineer (CE)."

In other words, HP intends to use a reseller's on-site repair ability in accounts where HP is already the service provider. "HP has always serviced what we sell, what we haven't done is leverage a reseller's capability into our own service business, especially in

client-server accounts. One of benefits of using resellers is that their service abilities are inherently multivendor." Although primarily focused in the U.S. market, a similar pilot was also initiated in Germany.

Calling it a "channel health initiative," Whistler explains, "It's a migration from HP's alternative workforce, using temporary employees, to our reseller service network." The customer will notice no apparent change, according to Whistler. "HP will continue to be responsible for customer satisfaction: troubleshooting and problem determination; problem diagnosis and parts identification and escalation; we still own the process from beginning to end." ●

HELP! IS NEEDS SOMEBODY!

A study sponsored by HP's WSCO's Software Services and Technology Group and conducted by the Boston Research Group (Boston, Mass.), found that about 120 of 200 information technology managers from Fortune 1000 companies (with worldwide responsibility for their company's enterprise network) were

concerned about the lack of in-house expertise to integrate and maintain 32-bit operating systems. "It's a distinct change in how corporate IS views the Intel platform," says Jonathan Goulden, director of HP's multivendor program. Goulden speaks from experience: he has been monitoring support needs associated with the Intel platform at the corporate level for about three years.

According to Goulden, a likely scenario involves an enterprise-level database server running on a UNIX box, in conjunction with Intel-based application servers running Windows NT and a Intel-based Windows 95 client. "That means more

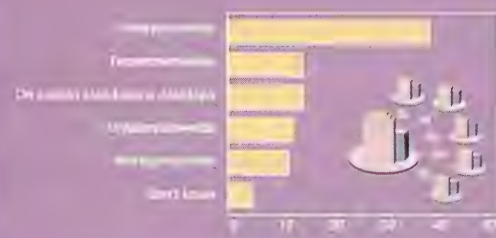
PC servers, like HP's NetServer, are getting integrated into mission critical situations," concludes Goulden. Forty-six percent of the 200 IT managers indicated they will most likely outsource the implementation while 31 percent indicated that they plan to outsource the network design. Nevertheless, 47 percent expect to run applications on 32-bit PC-based environments at the enterprise level within the next 18 months, compared with 24 percent who said they are currently running those apps.

"PCs, once perceived as primarily desktop presentation servers are now being associated with running the business," Goulden says. It also means that Intel/Windows NT platforms are more competitive with RISC/UNIX platforms, including HP's NetServers and HP 9000

servers. "There's more and more overlap," concedes Goulden. He also admits there were times that [HP] customers didn't have a choice." HP has been criticized in the past for resisting integrating Windows NT into its HP-UX environments. "But HP's position has always been [and remains] that Intel/Windows NT can't scale up to and match the largest UNIX boxes."

Still, he insists that rather than lose a sale, "we will simply advise a customer to go with whatever is appropriate — even if it means supporting Windows NT." In fact, according to Goulden, by the end of 1996, HP will have 450 to 500 support engineers with Windows NT and network OS training. When it comes to Windows NT, 54 percent in the HP survey expect to outsource end-user training while 43 percent expect to outsource IT management and staff training.

How Will 32-Bit Based PCs Be Implemented?



Source: Hewlett-Packard, Global Service & Support Issues Study (1995)

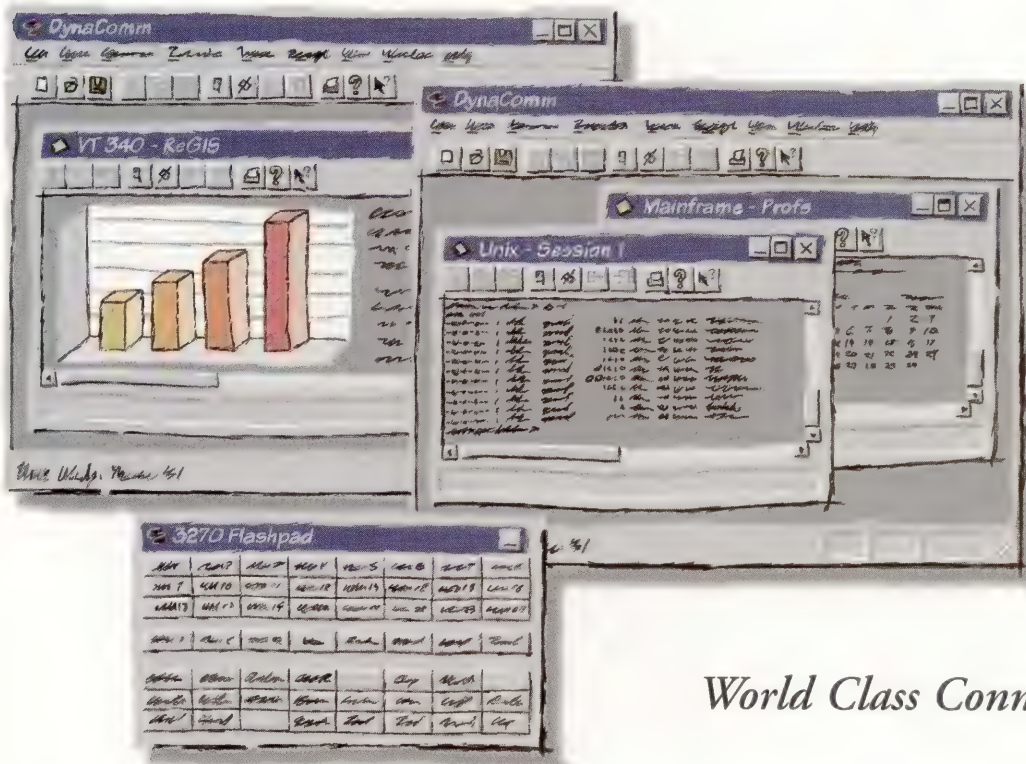
HELP! NOT JUST ANYBODY!

In the aforementioned survey, the same 200 IT managers, ranked the following criteria as "critical or very important" when selecting a service provider:

- Worldwide support (83%)
- Adequate infrastructure to provide services (71%)
- Multivendor support capabilities (66%)

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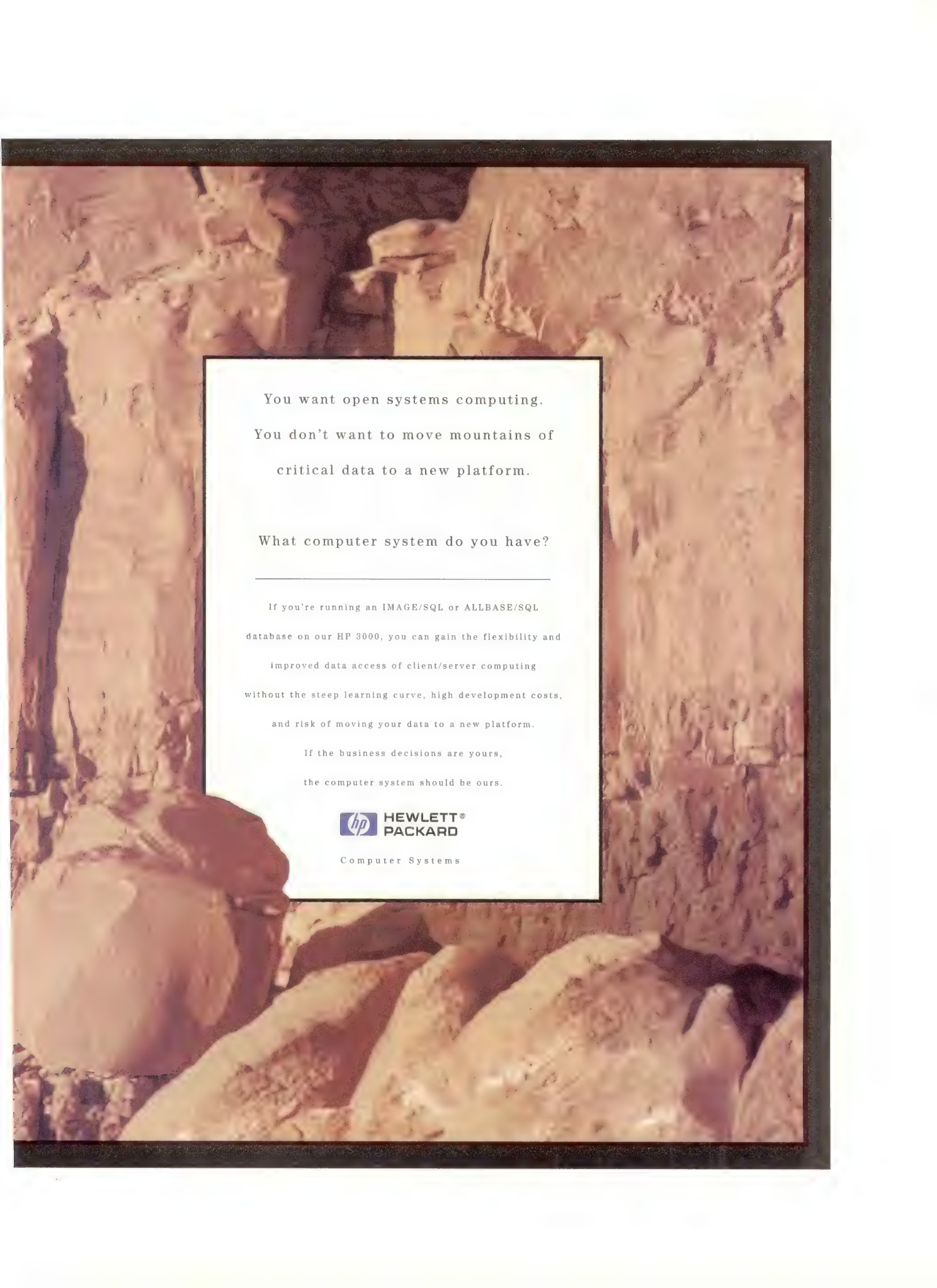
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Computer Systems

It Keeps Going And Going . . .

What a relief to finally see in print the viewpoint expressed in your editorial of August 1995, "Freedom of Sleaze." It's particularly refreshing to hear this point of view from a professional journalist.

I've been part of the computer industry for well over a decade, and I currently work with clients involved in commerce on the Internet. I share the opinions voiced in your article but had not yet articulated the thoughts in a clear, cohesive argument.

Now you've done it for me. Thanks.

*Frances Y. J. Wheeler
Principal
Wheeler PR & Marketing
Andover, Massachusetts*

I just finished reading [Bob Bruen's & Another Thing . . .] column from the October 1995 issue.

Thanks for expressing a view on the First Amendment that is completely free of hysteria. It is reassuring to know that there are still people in this world that do think and are capable of expressing themselves clearly.

I have long been a defender of the Constitution though I am not a jingoist by any stretch of the imagination. In this current environment of censorship and repression, there are too few voices on the side of common sense. Please continue to use your voice as you have done to help allow those of us who still want, to make our own decisions.

*Steve Frank
System Administrator
Boeing Information Services
Ridgecrest, California*

My name is Tri Doan, I'm a student from Cal State of Pomona Polytechnic University. I read Bob Bruen's article ("CyberPorn Versus CyberRights") and I totally agree that the Internet

shouldn't be regulated by anyone because of any emotional issue.

*Tri Doan
Co-op Computer Tech. Assistant
Cal Poly Pomona*

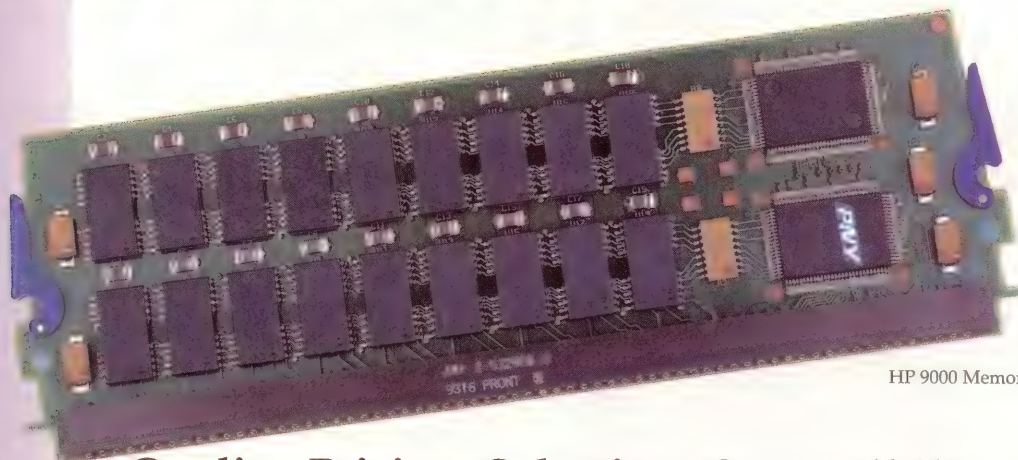
I wanted to drop you a quick note and tell you how much I enjoyed reading [Bob Bruen's] article from the October issue. The whole issue of censorship with regards to the "Net" seems to push the "Rights" issue off the table. While I am not a proponent of kiddie porn in any variation and it is unfortunate that it may have found a home on the Net, we, as responsible beings, choose whether or not to access the material. That freedom of choice is supposed to be protected by our government. The proponents of censorship have chosen a very sticky issue though. As [Bob Bruen] stated, it is a difficult issue to deny and keep one's dignity when others may frown upon you. I too, may soon find myself embroiled in a "net" controversy because I am responsible for implementing a full-time "net" connection for my company. I am sure that we will be pressured into limiting what information users can access. I only hope that we do not try to force predetermined morals and instead show a sense of trust in the organization.

*Joe Pelonzi
Manager Information Systems
Control Devices Inc.*

Letters may be edited and should be addressed to HP Professional, 1300 Virginia Dr., Ste. 400, Fort Washington, PA 19034. Fax number:(215) 643-4827. Internet address for editors:

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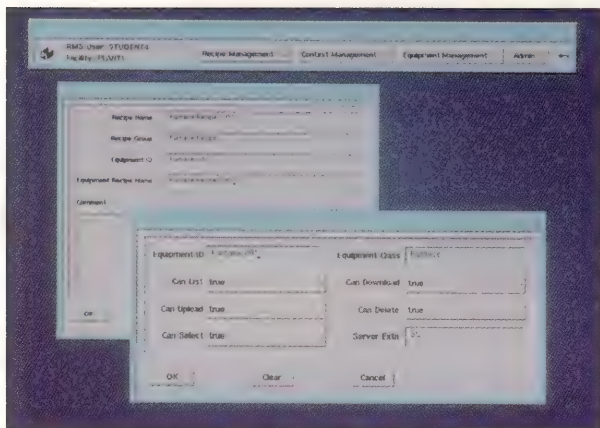
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CIRCLE 352 ON READER CARD

No one is perfect. Unless you're in the business of making semiconductors where perfecting thinner-than-hair slivers of silicon pays big dividends. For example, one bad batch of semiconductor wafers can mean a loss of \$100,000.

That's why in August 1995, HP invested \$1.6 million in WorkStream DFS from Consilium Inc. (Mountain View, Calif.), an 18-year supplier of MES software and services. WorkStream DFS is the result of Consilium's own \$40 million, four-year R&D effort. "But rather than building into WorkStream Open which is the core of the product," says Ralph Zak, Consilium's vice president of marketing, "we are building a suite of applications that can operate in a dis-


tributed environment." The first of these applications — the Distributed Factory System (DFS) — began shipping this past November. The DFS suite comprises three integrated server-based applications: the Quality Server, the Recipe Management Server (RMS) and the Station Controller "that share data across a network and are all linked back into WorkStream Open through message bus technology to interdependent [application servers]," according to Zak.

The Quality Server supports manual and automated data collection. "It builds on [WorkStream Open], providing high-resolution graphics and color coding for out-of-control alarms as well as trend analysis and filtering. With a feature called Chart Inspector, "you can drill down and see the data behind a trend," says Nick Ward, WorkStream product manager. "A feature called Dynamic Error Response provides for predefined responses, such as sending of messages or E-mail to lists of users or locations, under certain (exception) conditions. Another feature, called Trend Analyst, turns standard trend charts into a "detection chart" by dynamically changing the context of the X axis.

The RMS helps automate "recipe management" via a centralized "recipe library" or a "kind of card catalog file that tracks the set up and configuration of all the "the different ways that a product or family of products can be made," according to Zak. "It knows exactly what works and which job is being processed, knows what steps occurred before and what equipment needs to be used, and automatically downloads the correct recipe for an operator to use." The Station Controller application contains libraries to build equipment control scripts thereby providing a link to the automation equipment.

The new \$1.6 million HP deal is scheduled to be used in HP's InkJet Supplies manufacturing operation. WorkStream DFS also has been used successfully by AMD, the fourth largest merchant semiconductor manufacturer in the United States, in their Fab 25 facility. The core WorkStream Open application runs on HP-UX, DEC OpenVMS-based servers. However, DEC Alpha and IBM RS/6000 platforms versions of the core WorkStream Open product do not currently support the DFS apps.

—George A. Thompson,
Senior Editor



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Spanning The Globe

QAD Inc.'s MFG/PRO Prepares Companies To Face The Burden of Worldwide Operations



"Customers can put MFG/PRO to work quickly, resulting in fast product turn-around, reduced inventories and faster reactions to changes in their market."

Pam Lopker
President,
QAD Inc.

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CIRCLE 351 ON READER CARD

For many growing software firms, global markets can become a burden: something to live up to rather than something to benefit from. Yet occasionally, products come along which do support a particular industry on a global scale. QAD Inc. (Carpinteria, Calif.), a developer and supplier of integrated business software and services for open systems, maintains its MFG/PRO software is one of those products. With revenues rising to \$85 million in 1994, QAD is a company moving into new realms.

QAD is a player in what is referred to as the Enterprise Resource Planning (ERP) industry — a large group of vendors which the Gartner Group predicts will see a major shakeout by the year 2000. Yet Gartner recently ranked QAD as one of five ERP vendors sure to remain standing.

MFG/PRO was first developed for HP platforms in 1979 (HP-UX remains the leading operating system of choice for the MFG/PRO installed base), and QAD has since become an HP International Partner. The software provides a scalable glob-

al supply chain management solution for an array of manufacturing and distribution industries. MFG/PRO is available in 23 languages and is being used in 66 countries. The opening of an office in Wroclaw, Poland, supporting its growing Eastern European distributor network, recently punctuated QAD's expansion into the former Communist Bloc. And with major offices in Hong Kong, Sydney and Hoofddorp, The Netherlands, QAD is not kidding when it talks global vision.

MFG/PRO provides multicurrency, multilanguage business-tracking for manufacturers of medicine, electronics, food and beverages, consumer packaged goods and automotive products. Multinational QAD customers include The Coca-Cola Company, AT&T, General Motors, Philip Morris, Matsushita and Unilever.

Despite logistical complexities inherent to the manufacturing supply chain, MFG/PRO continues to provide quick bottom-line results. "Time-to-Benefit methodology remains an important element of MFG/PRO installations," says Pam Lopker, president of QAD. "Our customers can put MFG/PRO to work quickly, resulting in fast product turn-

around, reduced inventories and faster reactions to changes in their market."

Still, technological direction most often decides an ERP vendor's fate. It is generally accepted that object-oriented technology is the future of ERP. Providing a chance for vendors to integrate functions, objects should eventually facilitate the changes being predicted for the market. QAD already expects its upcoming object-oriented technology to cut lines of MFG/PRO source code by one third. The company also has remained on the cutting edge by releasing a GUI product this year, as well as a version of MFG/PRO for Microsoft Windows NT called MFG/NT.

Competitive software markets are not uncommon. Companies with true long-term, global vision are. QAD is set on proving not only that it's willing to seek new directions and destinations for its business, but that it knows how to get there.

—Barry Slawter,
Contributing Author



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CIRCLE 165 ON READER CARD

Once Upon A Product

Platinum Technology/AutoSystems Corp. Tells Job Scheduling And Management A Tale With AutoSys And AutoSys/Xpert



"It's important to be tightly integrated with HP. It means we will be able to provide customers with a maximum solution."

Chip McAvoy
Lab and Product Manager
Platinum Technology

1050 Walnut St., Ste. 515
Boulder, CO 80302
tel: (303) 442-1299
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CIRCLE 354 ON READER CARD

"It was the classic start-up story. A man holes himself up for months developing a product and building a company around it, and then moves on to success." So Chip McAvoy, lab and product manager for AutoSystems Corp., describes the genesis of the company, now a wholly owned subsidiary of Platinum Technology (Oakbrook Terrace, Ill.).

The man is Bill Arntz. Four years ago, Arntz was a consultant to Wall Street brokerage firms, and was instrumental in deploying some of the first significant client-server distributed systems in the Wall Street trading environment. "He saw the need for a job management system in the UNIX environment when there were hardly any tools at all," McAvoy says. "So he said, 'One of the first things we need is a job scheduler and job management system that is optimized for UNIX.' He had used job schedulers in mainframe and mini-computer environments, but you really couldn't port one of those to a distributed environment. You had to design it from scratch to take advantage of the capabilities of client-server."

Arntz did, and sales took off. "The product sold from

day one," McAvoy says. "Eight of the top 10 brokerage firms on Wall Street now use our product day in and day out, and it spread to other industries and internationally." The job scheduling and management tool, AutoSys, which is claimed to be currently processing over one million jobs per night, is now in version 3.2. AutoSys has recently been joined by a companion product, AutoSys/Xpert, which provides graphical views of job flows and simulation capabilities for job flow design.

At the end of December 1994, AutoSystems Corp. was acquired by Platinum Technology. The union offered AutoSystems the advantages of a large company, a broader product line and a larger sales force, while leaving the heart of the company intact. "Platinum's philosophy is to retain the technical talent," McAvoy says. "Each company was successful on its own, so the labs will be left to do what they do well."


One of the first platforms to be supported by AutoSystems was HP-UX. "We've always had a relationship with HP on the hardware side because we've been selling our software on HP's platforms," McAvoy says. In September 1995, Platinum

announced it will integrate its suite of systems management software into the HP OpenView Solution Framework, as well as plans to expand its current support of the Solution Framework to include integration with HP OpenView OperationsCenter.

Most of the eight Platinum system management tools to be integrated with OperationsCenter offer SNMP support and integrate with HP's OpenView Network Node Manager. McAvoy says, "We see OpenView and, specifically, OperationsCenter and Network Node Manager as key elements of what customers are trying to deploy. It's important to us to be tightly integrated with HP. It means we will be able to provide customers with a maximum solution."

According to McAvoy, this agreement raises Platinum to a high — and exclusive — partnership level with HP. "Only a few vendors will be included at this level in the new OperationsCenter. What's most significant is that it goes beyond AutoSys. It now includes the whole breadth of Platinum's system management products."

—Sam Dickey,
Contributing Author



WHICH UNIX SYSTEMS MANAGEMENT VENDOR HAS MORE THAN 4,000 COMPANIES APPLAUDING IN UNISON?

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CIRCLE 139 ON READER CARD

Data

Détente

F r a n k T e t t i

Understanding

Multidimensional Databases

Helps You To Balance

OLAP And Data

Warehouse Technologies

Without a doubt, database vendors disagree about the appropriate role for multidimensional database (MDD) servers within a Decision Support System (DSS) implementation. For example, Oracle Corp. (Redwood Shores, Calif.) and Informix Software (Menlo Park, Calif.) regard MDDs, or OLAP (OnLine Analytical Processing) servers, as a complementary technology to relational database management systems (RDBMS). On the other hand, Sybase Inc. (Inglewood, Calif.), Computer Associates International Inc. (Islandia, N.Y.) and IBM (Armonk, N.Y.) think a relational database foundation can support both online transaction processing (OLTP) and multidimensional database applications. Yet, contrary to some prevailing vendor opinions, you don't need a formal data warehouse, with all its logical and physical data models (as well as meta data), before using an MDD (see *OLAP: A New Role Model For Data Analysis* sidebar).

In many ways, the recent interest in data warehousing comes from recognizing that data sourcing is a critical part of any DSS effort. If you are facing an OLAP project that needs enterprise-wide data, you should minimally consider developing a small-scale data warehouse. Ten percent to 20 percent

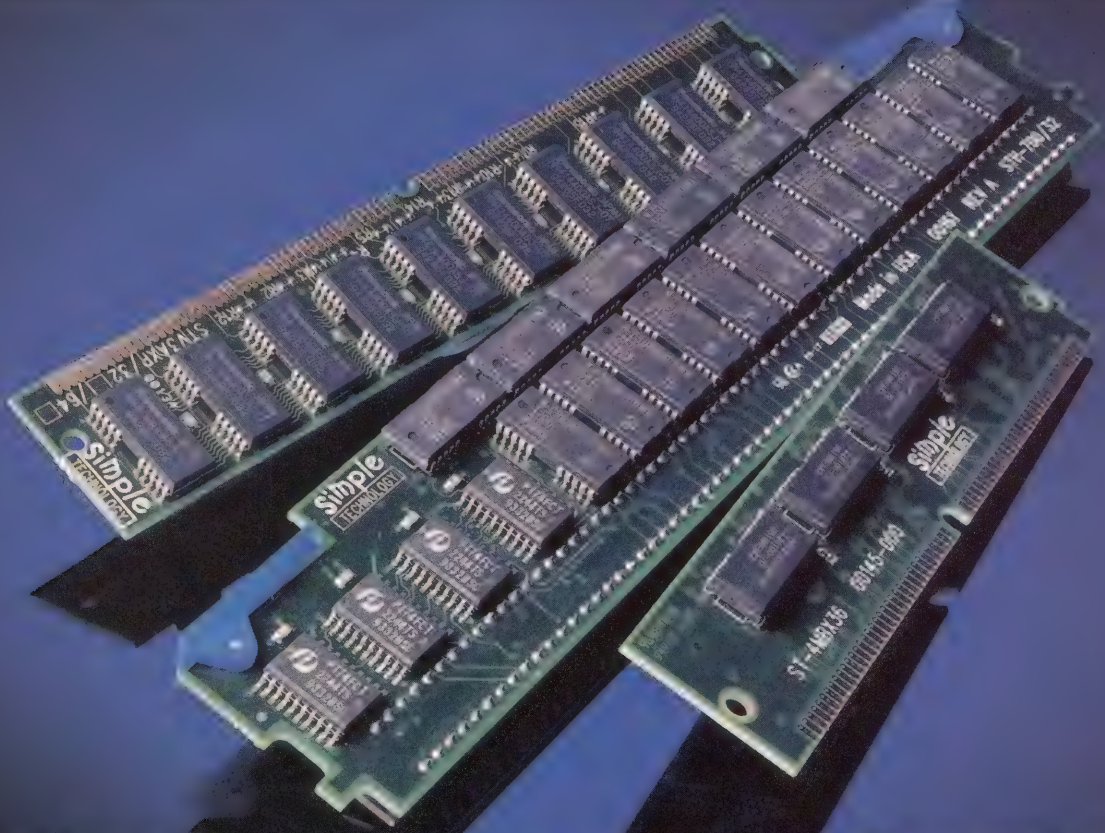
of the data in any corporate application (payroll, accounts payable, general ledger) might be of strategic importance and should have a common definition for easy integration within the warehouse and to other reporting and OLAP-type systems.

THE FAILURE OF SQL

DESPITE USING transactional SQL constructs, such as temporary tables, Boolean logic within stored procedures or Oracles' DECODE statement, SQL is abysmal for time-series analysis. For example, if you were creating a monthly, year-to-date and full year view of business segments by major categories and geography, *Figure 1* shows what the SQL code would like.

After all that, the result — a display of the monthly, year-to-date and full year revenue by business segment, major category and geography — is trivial. However, MDDs are specifically designed for time-series analysis. Acumate ES from Kenan Technologies (Cambridge, Mass.) and LightShip Server from Pilot Software (Cambridge, Mass.) include time-series data types, whereas other MDD technologies like Essbase from Arbor Software (Sunnyvale, Calif.) require the time dimension and its hierarchy to be explicitly defined.

For example, let's look at one automotive and truck production forecasting system. This system forecasted items down to the model level, using a multidimensional application that had a time-series data type — it stores an entire string of numbers in each cell and has attributes, such as start date, periodicity, data type (for example, numeric) and calendar functions. Because an automotive model year (which generally runs from October to September) is different than a calendar year (January to December), the ability to convert the time series from calendar year to model year was quite an advantage. The forecast could then be performed on a calendar year basis



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while also being reported on a calendar and model year basis. So, the final model was internally consistent.

WHAT ABOUT PERFORMANCE?

IT SEEMS TO BE an unchallenged practice in DSS implementations that the "denormalization" of a relational model is done to improve performance. The physical construct is usually one large "fact table" and several "one-to-many" dimension tables. Still, depending on the skill level of the users, an excessive number of "joins" can be unacceptable, causing a further

Today's obsession with the desktop and their showy GUIs seriously undermines the importance of data collection and containment in the organization.

denormalizing of the "fact table." Reducing the number of joins also leads you to increase your mass storage, as well as DASD I/O and performance degradation. In one DSS implementation within an IBM DB2 environment, the DSS reporting tables accounted for 18 GB of data, while the raw transaction data was about 500 MB — a 36 to 1 ratio (18,000 MB/500 MB) of OLAP-to-OLTP data. That's pushing it — cheaper mass storage notwithstanding. In this case, there were more aggregate instances of data than atomic data (see Figure 2).

As the DSS reporting process evolves and other reports and associat-

FIGURE 1

```
USE eisprod
go

/* Create stored procedure */
CREATE PROCEDURE P_BUSSEG @report_org int, @fullyear int, @currentperiod int,
@major_category char(22), @acct_num char(22), @rollup_num int as

/* Copy the predetermined table structure into temporary tables */

SELECT * into #VARIANCE
FROM tempVARIANCE
WHERE 1 = 2

/* Insert monthly values into temporary tables */

BEGIN
  IF @major_category = "CY"
  BEGIN
    INSERT #VARIANCE
    SELECT distinct EISFIN.org_num, EISFIN.org_name,
      EISFIN.bus_seg_num,
      (EISFIN.actlcy),
      (EISFIN.actlcy - EISFIN.budgcy),
      0, 0, 0, 0
    FROM EISFIN, DNBROLL
    WHERE EISFIN.org_num = DNBROLL.org_num
    AND EISFIN.org_num = @report_org
    AND DNBROLL.to_period is NULL
    AND DNBROLL.rollup_num = @rollup_num
    AND EISFIN.period_num = @currentperiod
    AND EISFIN.accttype_name = @acct_num
    AND EISFIN.bus_seg_num <> ""
    ORDER BY EISFIN.org_num, EISFIN.bus_seg_num

    /* Insert year-to-date values into temporary tables */

    INSERT #VARIANCE
    SELECT distinct EISFIN.org_num, EISFIN.org_name,
      EISFIN.bus_seg_num,
      0, 0,
      sum(EISFIN.actlcy),
      sum(EISFIN.actlcy - EISFIN.budgcy), 0, 0
    FROM EISFIN, DNBROLL
    WHERE EISFIN.org_num = DNBROLL.org_num
    AND EISFIN.org_num = @report_org
    AND DNBROLL.to_period is NULL
    AND DNBROLL.rollup_num = @rollup_num
    AND EISFIN.period_num <= @currentperiod
    AND EISFIN.accttype_name = @acct_num
    AND EISFIN.bus_seg_num <> ""
    GROUP BY EISFIN.org_num, EISFIN.bus_seg_num

    /* Insert full year values into temporary tables */

    INSERT #VARIANCE
    SELECT distinct EISFIN.org_num, EISFIN.org_name,
      EISFIN.bus_seg_num,
      0, 0, 0, 0,
      sum(EISFIN.fcstcybd),
      sum(EISFIN.fcstcybd - EISFIN.budgcy)
    FROM EISFIN, DNBROLL
    WHERE EISFIN.org_num = DNBROLL.org_num
    AND EISFIN.org_num = @report_org
    AND DNBROLL.to_period is NULL
    AND DNBROLL.rollup_num = @rollup_num
    AND EISFIN.period_num <= @fullyear
    AND EISFIN.accttype_name = @acct_num
    AND EISFIN.bus_seg_num <> ""
    GROUP BY EISFIN.org_num, EISFIN.bus_seg_num
  END

  ELSE
  IF @major_category = "PY"
  BEGIN
    ...
  END

  else
  /* if @major_category = "PF" */

  BEGIN
    ...
  END

  /* Display a view of the temporary table with monthly, year-to-date and full year values */

  BEGIN
    SELECT DISTINCT
      #VARIANCE.org_num,
      #VARIANCE.org_name,
      BUSSEG.bus_seg_name,
      sum(#VARIANCE.col_1), sum(#VARIANCE.col_2),
      sum(#VARIANCE.col_3), sum(#VARIANCE.col_4),
      sum(#VARIANCE.col_5), sum(#VARIANCE.col_6)
    FROM #VARIANCE, BUSSEG
    WHERE #VARIANCE.num = BUSSEG.bus_seg_num
    GROUP BY #VARIANCE.org_num,
      #VARIANCE.org_name,
      BUSSEG.bus_seg_name
    ORDER BY BUSSEG.bus_seg_num
  END
END
RETURN
go
```




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DATA DÉTENTE

ed data are added to the system, the denormalizing process, which presumably makes reporting simpler and faster, becomes counterproductive. The accepted practice of denormalizing and pre-aggregating logical totals within SQL databases for DSS reporting seems to have run its course and needs to be challenged. From an implementation-specific angle, an MDD is like any other database.

For example, Essbase data structures include an indexing as well as an allocated data storage structure. The index points to the location in memory (or disk) of an allocated group of data. Groups of data are referred to as blocks which are similar to records. OLAP technologies tend to use more RAM (which gets expensive) than disk capacity, but that's also one of the reasons they perform better than SQL databases. Additionally, in Essbase, sparse dimensions (a multidimensional cell containing no data; a similar concept in relational parlance is known as a null value) don't use any storage space and therefore uses RAM more efficiently, further enhancing performance.

DRILL DOWN

THAT'S WHY MDD software and OLAP servers are now becoming part of the scenery within the mainstream

FIGURE 2

Comparison of Relational and Multidimensional Technologies		
	Advantages	Disadvantages
Relational	Designed for OLTP Established SQL Standard Mass storage intensive (inexpensive)	Does not support intuitive view of information SQL is difficult to code
Multidimensional	Designed for OLAP Supports drill-down, roll-up, cross-tab comparative views Better performance	Some data is stored redundantly ("sparsity") No standards established RAM intensive (costly)

software landscape. Dun & Bradstreet Software (DBS; Atlanta, Ga.) fired the first shot when it acquired Pilot Software at the end of 1994. DBS is now working with Pilot to integrate its SmartStream client-server package with Pilot's LightShip Server. However, this will not be in place for SmartStream Release 4. In LightShip Server 2.1, the latest version of Pilot's OLAP server, Pilot has added the ability to populate the server with data from Oracle and other ODBC-compliant RDBMSs.

In June 1995, Oracle acquired IRI Software's Express MDD. Plans call for unifying Express and Oracle7 Multi-

Dimension into a horizontal OLAP offering, while maintaining Oracle's database engine. Arbor Software will distribute its multidimensional engine behind the next version of Microsoft's Excel. Based on current industry activity over the past two years, the future software portfolio for most of the relational database vendors will include a MDD. In other words, it provides drill-through to SQL, the promised land for MDD vendors. Users therefore will not need to maintain a separate OLAP database. Arbor, which has been rumored to be on both Microsoft's and Informix' acquisition lists, has forged development and marketing pacts on the data warehousing front with Informix and HP. For example, HP's agreement with Arbor has led to HP's Intelligent OLAP Builder (\$20,000) as part of its Open Warehouse program.

Not to be left out of the fray, Sybase's IQ is an optional extension that uses patented bit-wise indexing technology to deliver purported breakthrough performance for complex, interactive queries. Under the Sybase Warehouse WORKS Alliance (code-named Highgate), the software accomplishes queries in a way similar to ones done by OLAP servers, against the SQL Server engine. For small-scale applications, Sybase doesn't have to look too far for a solid "virtual database" solution, PowerBuilder (now owned by Sybase) has a data window

A COUNCIL OF CUBISTS

In an effort to raise the industry's multidimensional and OLAP consciousness, the OLAP Council was formed in January 1995. Recently, the members announced that they have completed the specification of a generic application programming interface (API) providing access to and management of multidimensional views of data. The specification offers a single, vendor-independent link between front-end access software and OLAP data sources.

The OLAP council believes that the API simplifies the inclusion of multidimensional data access and analysis into any application. The draft API specification will be publicly released for comment by year-end, once technical documentation is completed. After review by customers and analysts, the standard will be placed in the public domain.

At best, this API might be as useful as ODBC. However, the cubists do not have the theoretical robustness of set theory to rely on and, before ODBC was initiated, a core set of SQL syntax had already been readily adopted even in the xBASE world to some extent. As a programmer, I prefer native connectivity and only rely on ODBC when I want the same application to interoperate with multiple DBMSs. At the least, "the spec" might push MDD vendors to standardize — to a degree — their own APIs, which today range from flat-out 3GLs to quasi-SQL syntax. —FT

OLAP: A NEW DIMENSION FOR DATA ANALYSIS

Employee Data Supplied

- Number of Voluntary and Involuntary Departures
- Personnel Level
- Department

Calculations

Total Voluntary Departures / Total Employees
Total Involuntary Departures / Total Employees
Total Terminations / Total Employees

Yields

Turnover Ratio

Key Performance Measures

Turnover Ratio
Voluntary Departures
Involuntary Departures

Dimensions

Personnel Level
Department (a roll up)
Time (a roll up)

Frequency
Monthly

Definition
The total number of employees departing as a percentage of total employees.

Example of a Dimension Map

A dimension map is a practical construct for defining and specifying data in an OLAP model. A dimension map includes items, such as key performance measures, dimensions, frequency, calculation, definition and other

meta data. After the model specification process is under way, the data prospecting phase can be initiated. In OLAP applications that use enterprisewide data, this phase includes the search for atomic data definition contained in source feeder systems. Information that is highly correlated is the most likely data you want in the OLAP model. Conversely, models with excess sparse data are, in some ways, misspecified, because there is a lack of correlation. For additional information about data warehousing and OLAP, see "An Information Coup" and "The House That Data Built" from *HP Professional's* December 1994 issue.—FT

of type crosstab, which can dimension-ize a relational database, creating a memory structure that has pointers to SQL data residing on disk. This is a useful tool — and it is already available.

NOT A "SILVER BULLET"

STILL, DON'T think of OLAP as a "silver bullet" approach. OLAP has to improve programmer productivity, increase analytical capabilities for the functional analyst and increase data throughput or performance or it will forever be relegated to a cult following for computer mavericks and SQL illiterates. The most significant item of interest emanating from the OLAP Council (see *A Council Of Cubists* sidebar) over the past year is the performance benchmarking of multidimensional against relational technology. Although performance in DSS environments is of paramount importance, this will be a difficult thing to quantify on a truly comparative basis. Besides, performance is only one of the factors to consider.

Today's obsession with the desktop

and their showy GUIs has seriously undermined the importance of data collection and containment in the organizational effort. Why? Because of a collective lack of appreciation of data, data definitions and CASE by top management. Business management types in most organizations look at a data warehouse as a luxury — not a necessity. For IT managers then, it seems the only way to effectively sell the concept of a data warehouse is to tightly couple it with the successful outcome of an OLAP effort. It's easy to see why. The top brass can readily appreciate a slick OLAP application because it's easy to see how it helps them run the business. However, quantifying the results of a data warehousing effort is much more difficult.

In large-scale, enterprisewide efforts, a data warehouse can provide the infrastructure for OLAP applications — particularly because most OLAP implementations tend to be departmental in scope. Delivering data to the desktop can be accomplished using a relational database or MDD model. But if you consider the number of tasks required to transfer that strategic information, the ongoing applica-

tion maintenance, the performance and the final cost of the delivery, using an MDD could be a reasonable alternative. Because of the unique design and physical implementation details that need to be considered, OLAP/DSS-specific system development lifecycle methodologies are also worthwhile.—
Frank Teti, currently with KPMG Peat Marwick's Enabling Technologies Group (Radnor, Pa.), traces his seminal interest in OLAP back to a graduate school thesis centered on advanced regression and time-series analysis. He can be reached at

Frank_Teti@fcbbs.ss.kpmg.com.

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Take

OLAP Around The Database

OLAP Rescues

Administrators From

Drowning In The

Corporate Data Pool

After spending the last five decades focused on automating operational functions, such as payroll, order processing and shop floor management, IT is now busy automating decision support — in other words, the tools that help knowledge workers or business user functions.

OLAP, or OnLine Analytical Processing, brings ease-of-use and analytical capabilities to decision makers. Through a sequence of simple steps, business users can take advantage of OLAP servers to drill down from high-level information. OLAP servers also have the capabilities to handle complex, derived data, such as is common in financial consolidations. That means better and faster business decisions. But it doesn't mean you should abandon your data warehouse.

The data warehouse feeds "clean," integrated data into an OLAP multidimensional database (MDD) and the OLAP server acts as a kind of analytical data mart to the warehouse (sometimes called the "data retailing" model). In theory, a data warehouse and OLAP environments should be complementary to help their knowledge workers more quickly and wisely react to the market. A decision support solution then, should integrate the strengths of OLAP and data warehousing technologies.

Nevertheless, companies trying to implement the two have encountered two serious obstacles:

- A lack of coordinated management between the data warehouse and OLAP environments
- Poor performance when drilling through to the data warehouse

Coordinated management requires an administrator to build and maintain both environments as well as keeping them synchronized. Although it may not be intuitively obvious, this synchronization problem exists not only in MDD-OLAP environments' where the MDD contains a replicated subset of the warehoused data organized for optimal performance and analysis, but also in Relational OLAP environments where its always built on top of a data warehouse.

When the environments are not kept properly in synch, data quality problems

G e o r g e F e r g u s o n

will occur, resulting in a great deal of administrator time spent correcting the errors or, worse yet, incorrect business decisions made by misled knowledge workers.

The problem of synching is exacerbated because a large number of items that are data values in the relational environment serve as metadata elements in the OLAP environment. For example, a typical data warehouse might include product names, sales district names and sales office names as data contained within columns of relational tables within a relational database. These data values are metadata and actually part of the multidimensional schema or environment definition in the OLAP environment. Thus, every time that a company introduces a new product, obsoletes an old, reorganizes their sales force or even opens a sales office, their multidimensional schema needs to be updated and, in the case of an MDD, the MDD must be regenerated. Within an OLAP environment, everything except the data mea-

REAL ANSWERS REAL FAST WITH RELATIONAL OLAP

The Aberdeen Group (Boston, Mass.) believes that enterprise planners can turn to Relational OLAP suppliers to bolster complex decision-support systems. A new class of suppliers — MicroStrategy Inc. (Vienna, Va.), Information Advantage Inc. (Minnetonka, Minn.) and the Stanford Technology Group (San Francisco, Calif.) have demonstrated that an optimized RDBMS can be combined with powerful, flexible query-tool capabilities. At the heart of Relational OLAP is dimensional modeling, which organizes information into two types of data structures: measures or numerical data (sales and gross margins), and dimensions (fiscal quarter, account and product category). Measures are stored in "fact" tables; dimensions are stored in satellite tables and are joined to the fact table.

With an eye toward improving query performance and preparing the system for the inevitable business-driven changes, relational OLAP tools also strongly rely on metadata dictionaries. When changes do occur, databases, metadata, desktop tools and reporting applications automatically reflect the changes. In other words, relational OLAP prepares an RDBMS to deliver full multidimensionality and enables business users to view and analyze its contents from many perspectives — *without requiring a specialized MDB.*

Adapted from Market Viewpoint, July 7, 1995 published by the Aberdeen Group Inc.

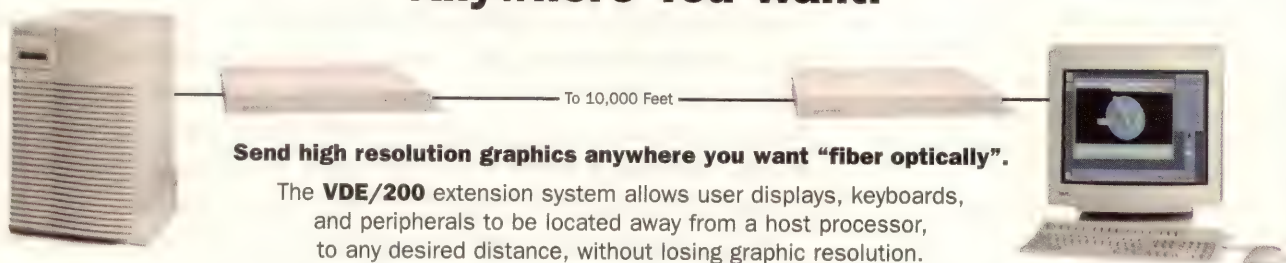
asures (sales in units or dollars) is metadata and part of the multidimensional schema.

Acceptable performance for queries that drill through the OLAP environ-

ment back into the relational data warehouse is primarily an issue for MDD-OLAP servers. So queries to an MDD-OLAP server are satisfied extremely fast (in sub-seconds to a couple of seconds).

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OLAP

In contrast, queries that drill through into the data warehouse may take at least minutes — maybe even hours. Furthermore, even when summary (or aggregate) tables are added to the relational data warehouse, the OLAP definition must be manually changed to take advantage of them.

LIMITATIONS OF OLAP

STILL, OLAP HAS its limitations. Key among these is the effort needed to clean up, integrate and organize transactional data for use by the OLAP environment. The problem of data clean-up and integration is usually underestimated by companies and represents a major undertaking. This is fundamentally the problem addressed by data warehouses. The data warehouse is comprehensive — encompassing multiple, generalized subject areas and very large sizes in a fully IT-managed environment. Furthermore, the data warehouse supports a full range of data access requirements, including everything from reporting to data mining.

Another limitation of OLAP environments is that they focus on exploratory data discovery and data analysis. In contrast, specific questions and standard reporting are typically better handled by standard relational data access and reporting tools. OLAP environments are more constrained in the types of questions that can be asked than are standard RDBMS environments. Related to the query-type constraints, OLAP environments are also constrained to a single subject area orientation.

Restricted size is another significant OLAP limitation. The largest single MDD environment created to date was just over 40 GB. Partitioned environments encompassing multiple MDDs acting as a single logical MDD have been created with over 100 GB. The typical MDD — even with sparse matrix handling — will expand raw, detail data by 10 to 40 times in building a full database. Thus almost all MDDs created to date have been under 1 GB of raw, detail data. In some products, this size limitation may have technical roots, but usually the limitation appears to be one of man-

ageability. The MDDs do not have as robust backup/recovery and other management capabilities as do the merchant RDBMSs. Furthermore, the load/index time needed to create very large MDDs may make them impractical.

Relational OLAP tools mitigate some of the size limitations of the MDDs, but they do so at the cost of performance. Even when overlaying a large relational database, Relational OLAP environments are typically much smaller than their underlying relational database.

HP'S INTELLIGENT WAREHOUSE

INTELLIGENT Warehouse (\$75,000) is HP's data warehouse management

software. HP's Intelligent Warehouse (IW) OLAP Builder (\$20,000) is a three-tier client-server application. The client interface is a Microsoft Windows-based application. The middleware resides on a IW Hub (an HP 9000 server). The actual data warehouse, however, could be on an HP 9000, an HP 3000, or any other open systems or mainframe platform using most popular RDBMS.

The IW OLAP Builder is a new IW add-on product that allows administrators to more easily create multidimensional schemas for OLAP environments and to keep the schema in synch with the data warehouse. The OLAP Builder additionally helps MDD-OLAP servers by generating SQL for loading the

STORAGE: DATA WAREHOUSING'S HIDDEN CORNERSTONE

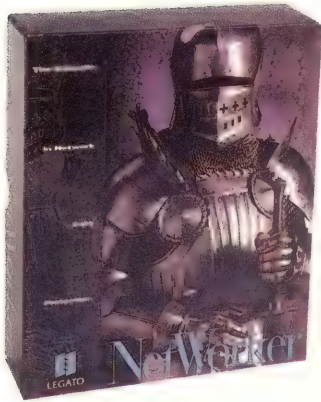
Data warehousing planners typically focus their efforts on the operational data, the database management system and the client in decision support system (DSS) applications. A fourth "hidden," but nevertheless critical, cornerstone of a data warehouse strategy is the storage system that physically manages the movement, placement, backup and restoration of data. If storage is not properly planned for, the result will be enormous waste and frustration, and can cause the entire DSS to collapse.

It is estimated that the amount of digital information that will need to be stored over the next five years will be twice the amount gathered over the last 35 years. This information is being generated not only in traditional applications, such as payroll and manufacturing, but also from new data- and graphics-intensive applications, including data mining, imaging and workflow, modeling and simulation, OLTP, and decision support. The Gartner Group points to new application areas such as data warehousing and metadata (data about data composed of repositories, indices and templates), each adding 10 percent to 25 percent to today's storage capacity requirements. By failing to consider storage as a key element of a data warehousing strategy, data warehousing planners leave themselves open to acute problems because the data warehouse places greater stress on the storage system than operational data from business process systems.

With this increased need for storage, it has become clear that storage is of central importance to IT departments deploying data warehouses. That's why HP, EMC Corp. and Oracle Corp. recently unveiled a 4 TB DSS that was developed with standard storage systems from EMC, processors from HP and database technology from Oracle. While the project was hailed as a technology breakthrough because it created the world's largest data warehouse, it also received accolades because it proved that data warehouses of any size can be optimized using standard software and hardware.

In addition, the value of all that data is entirely dependent on the protection and speed of data movement provided by the storage system. If it doesn't work well, the DSS is compromised. A discussion of all the components in a data warehousing strategy can be found on EMC's WWW home page: <http://www.emc.com>.

— John Bernardi, Business Development Manager at EMC Corp. (Hopkinton, Mass.)



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MDD from the data warehouse, scheduling/executing the load and optimizing drill-through queries to the most appropriate relational summary tables.

The IW Hub maintains a metadata database (in CA-Ingres, Informix, Oracle, Red Brick or Sybase) which contains definitions for mapping a logical multidimensional view of the data warehouse into physical, relational detail and summary tables and columns. This generalized

metadata store which was originally developed to enable ODBC-compliant data access and reporting tools, is also crucial to creating and maintaining the OLAP environment. The relational database has no knowledge in and of itself as to the hierarchies that make up the heart of the OLAP environment. Using the OLAP Builder, an administrator or power user uses a point-and-click interface.

Using the OLAP Builder can usually

save 80 percent to 90 percent of the administrator's time in creating the OLAP environment. The big savings comes from the help that the OLAP Builder provides in maintaining synchronization between the data warehouse and OLAP server. The OLAP Builder will in many cases automatically regenerate the multidimensional schema and, if necessary, rebuild the MDD. The IW OLAP Builder currently supports Arbor Essbase and will support Oracle Express in first quarter 1996.

The Intelligent Warehouse's summary-seeking capability also will help drill-through queries by automatically mapping them to the optimal summary tables in the relational data warehouse. IW also will graphically advise the administrator of when relational summary tables should be populated (or depopulated) so as to help the administrator tune the OLAP/data warehouse environment based on usage patterns, a

capability valuable in MDD-OLAP and Relational OLAP environments.

CAN'T STAND THE PRESSURE

THE COMPETITIVE pressures of the present business climate — globalization and major regulatory changes (in telecommunications, financial services, public utilities and healthcare) — are forcing IT management to explore the data stored in their databases and translate it into meaningful information. So, like it or not, many large- and medium-sized corporations need a decision support solution that integrates the strengths of OLAP and data warehousing. — *George Ferguson is HP's OpenWarehouse Program manager and one of the co-founders of HP's OpenWarehouse program. For more information visit <http://www.hp.com>.*

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Starlight, Star Bright In Delivering Desktop Video

In the marketing minds of the Asynchronous Transfer Mode (ATM) vendors, nothing less than

ATM effectively delivers broadcast-quality video images to networked computers. But that's not the line taken at Starlight Networks Inc. (Mountain View, Calif.). By providing a delivery mechanism for store-and-forward video on a networked server, Starlight is successfully challenging the ATM-one-and-only-for-broadcast-video notion.

In November at Comdex, HP announced that it's bundling Starlight's StarWare with all its Intel-based NetServers and Starlight's StarWorks with all its HP-UX-based servers. It's a key industry endorsement for Starlight, which also has similar agreements with Sun Microsystems Inc. and IBM to sell the UNIX-based StarWorks on their respective systems.

StarWare is a NetWare Loadable Module (NLM), while StarWorks delivers full-motion video over existing 10BaseT Ethernet and Token Ring networks, says Stephen Mitchell, Starlight's vice president of worldwide field operations. "People already have their (10BaseT and Token Ring) infrastructures in place," says Mitchell. "We believe it will be a long time

before customers have ATM throughout their enterprise, so we think there's room in the market for us." Dan Abouav, managing director for HP's interactive media solutions group, concurs: "The lowest common denominator is the LAN," he says. "The beauty of StarWare is that it runs over existing PC networks delivering multimedia solutions to the desktop without any changes to the network."

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StarWare and StarWorks are software-only solutions that *reserve bandwidth* in three ways, says Mitchell. "On the server side, bandwidth reservation means that our software validates the processing power available to deliver full-motion video. Once we determine it's available, we reserve that bandwidth on the processor, so video has priority over other data types." Starlight's products then repeat the validation-reservation process on the network and then at the desktop. The desktop "is the hardest of all," because full-motion video, which runs at 30 frames of a second, is streaming data [as opposed to the usual network data packets]. "You can envision [streaming data] as turning on a water faucet full blast," says Mitchell.

StarWare and StarWorks can use TCP/IP or Starlight's proprietary Media Transport Protocol (MTP) to move video between a server and workstation. But TCP/IP, like

Novell's IPX for NetWare, is a burst-type protocol "which can lose packets, which makes video jitter," explains Mitchell. Starlight's MTP uses what Mitchell calls "traffic shaping" to move video across a network. Traffic shaping allows the Starlight products to guarantee the 1.5 Mbps network bandwidth required to transport full-motion Motion Picture Experts Group (MPEG) compressed video across a network. StarWare 2.0 for NetWare can support up to 150 Mbps of streaming data, allowing as many as 100 users to simultaneously access broadcast-quality MPEG-compatible video. Previous versions of StarWare supported rates of 50 Mbps which was good for about 40 users.

Analysts say the HP-Starlight agreement could be a catalyst for growth in the stagnating desktop-video software market. Desktop-video shipments from the second to the third quarter of this year fell 10 percent, according to TeleSpan Publishing (Altadena, Calif.), a market research firm. Applications driving the desktop-video market include on-demand training and personnel support and delivery of real-time financial information. For example, Federal Express uses Starlight products to deliver desktop video that helps its service representatives quickly handle customer complaints and problems.

WHAT ABOUT UNIX?

Interestingly, Charlie Bass, founder of Ungermann-Bass (now UB Networks), is competing in the desktop-video market against his former colleague, Ralph Ungermann. First Virtual Corp. (Santa Clara, Calif.), Ungermann's new venture, has taken the "high road," by developing desktop-video products that run over ATM networks. Another key "player" in this marketplace is InSoft (Mechanicsburg, Pa.), developer of InSoft Network Television (INTV!) desktop-video software. INTV! uses InSoft's Digital Video Everywhere (DVE) communications software to provide on-demand video and audio data to users across a LAN or WAN.

INTV! uses what InSoft calls "IP

multicast" technology to reduce network traffic, and CPU and system-bus resource use. This technique reserves special network addresses for multimedia messages, which are processed only by nodes that have requested these messages. This method distributes messages optimally to all nodes simultaneously, greatly reducing the network bandwidth demands of multiple desktops. A multimedia server pre-configured with StarWare 2.0 on HP's NetServer supporting 50 users and 20 hours of MPEG video costs about \$28,000.

The StarWare software by itself ranges in price from \$4,995 for 10 users, to \$34,995 for 100 users. While InSoft's INTV! pricing varies according to system platform, compression algorithm and licensing structure, INTV! video servers start at \$4,995 while INTV! video clients, or "viewers," begin at \$250.

The Starlight-HP agreement proves that HP believes "it must be able to do

video to the desktop to compete," says Keith Wimberley, InSoft's director of marketing. "It's also important to note that they will be supporting HP's Vectra PC on the client side, but not HP's UNIX." However Starlight and HP intend to jointly develop workstation client software for HP-UX. That software will emulate the PC client in Microsoft's Video for Windows, which formats received video signals for displaying on a monitor screen. No such technology now exists for UNIX-based workstations. However, HP-UX support isn't expected until mid-1996.—*Jim Carr is a Saratoga, Calif., freelance business and technology writer who has worked in and covered the networking industry for more than 10 years.*

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Bundle It And They Will Come

I hate my cat. Every morning at 3 a.m., he decides to either come in, or go out. And being a male

cat, he yowls to wake the dead (usually just me). Being roused from a sound sleep isn't that bad; it's what happens to the brain when disturbed at that ungodly hour that causes problems.

So it was at my customary "kick the cat" hour, that I got an overwhelming desire, for some unknown reason, to run a few fluids modeling simulations on my HP Series 700 workstation. After logging in, I remembered that I don't have any fluid dynamics software (it's 3 a.m., after all). No problem, this is 1996. So I hopped in my minivan, and shot off to the 24-hour drug store.

"Hmmm. Let's see, where is the PC shrink-wrapped software section. Must be here somewhere. Ah, yes. "Mc-Fluids" for UNIX. Desktop ready. Only \$19.95."

TOO TRUE TO BE GOOD?

Merely a dream? Hardly. It's more like a nightmare. Because it will all be true soon enough — except the part about the drug store and the price. Yes, technologies exist today to make it possible. The first is CD-ROM. Vendors are already shipping CD-ROMs with multiple platform versions of binaries on the

same disk. The second is the coming ability to write shell scripts using POSIX-compliant commands, so multi-platform shell scripts are easier. But the true enabling technology lies within a "new user desktop environment" called CDE (Common Desktop Environment).

Application Integration Packaging is one of the features this newly deployed user environment provides. Application Integration Packaging allows an application vendor to ship desktop configuration files with the application that will, upon installation, provide a user with mouse click access to the application. These Application Registration Packages are platform-independent: if you are running CDE on a UNIX workstation, they will be properly interpreted. Think of how you can access HP-provided tools in toolboxes and the file manager today in HP VUE, and you should begin to understand how applications will be shipped with CDE.

Each software package will have an application registration shipped with it. And, it will be easily found (according to integration policy) as **dt** in the applications installation (root) directory. For example, if you load Interleaf Version 6 into a target directory of /opt/ileaf6, and they ship a CDE registration package, it might exist as /opt/ileaf6/dt. We'll look at the format for this tree and its files later; for now, we'll concentrate on the applications installation script.

The applications installation script might integrate the application auto-

matically at installation time if CDE is loaded on the host. This would be done by looking for the directory /usr/dt, or the integration program itself /usr/dt/bin/dtappintegrate.

Once an application is integrated (or registered) the application will have some or all of these features: appear in CDE's application manager with a special icon; application data files will get special file manager icons; allow double-click invocation of the application via the data files, or application manager icons; have special print actions; have help files integrated; and appear on the CDE front panel, or in a subpanel.

This is what UNIX-heads call desktop-ready software (or CDE-ready, if you like). PC software developers call it Windows-ready software. You probably know it better as shrink-wrapped software: unwrap it, load it, use it. CDE brings shrink-wrapability to UNIX.

I hope every application developer in the world doesn't decide that every application will suddenly appear on my

CDE front panel. So, let's pray they ultimately *let me and you decide* whether it should appear or not.

I'm also hoping they prompt us with the following questions during an application installation:

- Do you want to integrate the application?
- Do you want this application installed in an application manager group? *I hate the way Windows apps all want to create their own group.*
- Do you want the application to show up on the CDE front panel?
- Do you want the application to show up on a subpanel? And which one?
- Do you want to specify another application location rather than default?

This can all be done simply with shell scripts. Of course, even if the application developers do intrude on my system, a fix is only one command away. With **dtappintegrate** I can "re-package" the application package to do what I want. That's still easier than starting from scratch as we do in HP

VUE today. The **dtappintegrate** tool takes the application source location as a required argument. It then creates symbolic links in a system default location (/etc/dt/appconfig) where the window manager and other session control programs will "pick up" these files.

Now we'll look at the structure of a CDE Application Registration Package. The following is a list of the directories found under an application package directory.

The contents of these directories are:

dt/appconfig

All C subdirectories are used when no language is specified (default). Instead there might be a directory for specific languages. For example, there might be dt/appconfig/help/Swedish_locale directory for localized help files.

dt/appconfig/icons

dt/appconfig/icons/C

The icons tree contains icon files in the CDE named manner, this is using .pm for pixmap files (color), .bm for bitmap, with a sub extension of size: .t,

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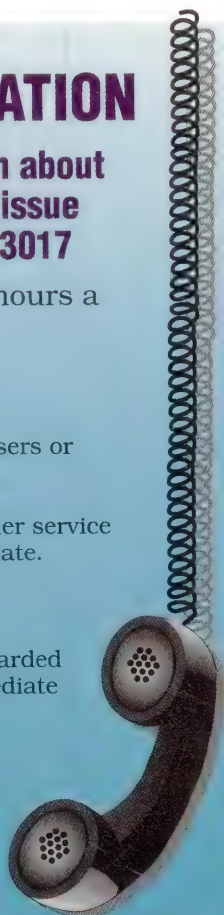
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.s, .m and .l (tiny, small, medium and large, respectively). There is also a .ic suffix for client icon.

dt/appconfig/types
dt/appconfig/types/C

The types tree contains two types of files: action and data type definition files, which end in a .dt extension, and are similar in function to HP VUE's .vf files. This tree also can contain front panel definition files. These are

named with a .fp extension

dt/appconfig/help
dt/appconfig/help/C

The help tree contains files used by the help manager.

The CDE vastly *improves* how you define front panels. They also *removed* some of the functionality in VUE. However, the beauty of the CDE's syntax is that you can specify a control, and where it should appear on the front

panel in the control definition itself.

For example, the following definition, if placed in any types/<language>/*.fp file will cause Interleaf to appear on the CDE personal applications subpanel:

```
CONTROL Ileaf6
{TYPE icon
CONTAINER_NAME PersAppsSubpanel
CONTAINER_TYPE SUBPANEL
ICON Ileaf6
LABEL Ileaf6
```

Here you don't need to re-define the subpanel (container) to include the control name. This makes front panel files modular.

```
dt/appconfig/appmanager
dt/appconfig/appmanager/C
```

The last tree structure in an application registration package is the appmanager tree. These are the equivalent of the types/tools tree in HP VUE. That is, the **appmanager** tree contains "action stub" files and directories. Every directory and file below in this tree will appear in the application manager. Application integrators are supposed to create an application group directory, such as appmanager/C/Ileaf6, which would contain stub files for things like the executable, help files and sample documents. The trick to files in this directory is that they must have execute rights, and some .dt files must define an action by the exact name of this file. The CDE session started program **dtappgather**, searches all appmanager directories in the application searchpath variable, and creates symbolic links in a user session specific directory (/var/dt/appconfig/appmanager/<user>-<display>-<#>) that point back to the integrated applications location.

So, sitting here at 3:30 a.m., I'm thinking why it is called an Application Registration Package? And if you must "register" this package into the system before it becomes part of the desktop, why do you use a tool called **dtappintegrate** to do it? —Fred hopes to be very busy this year teaching CDE classes. He can be reached at frederm@aol.com.

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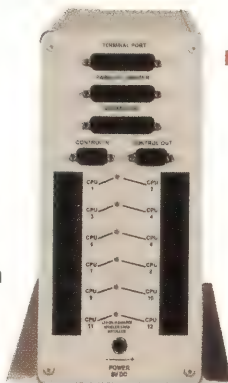
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SOFTWARE

Platform Computing Installs LSF V2.2

Platform Computing Corp. installed a test version of LSF (Load Sharing Facility) version 2.2 in several large commercial computing environments. LSF monitors the load on each network node and, based on its dynamic knowledge of available resources and amount of memory, specific software license and data availability, determines on which node jobs should run. LSF then remotely and transparently executes jobs to achieve fast turnarounds and optimal use/balance of system resources. New features include: production job scheduling; DCE support; and multicluster and WAN support.

LSF version 2.2 supports HP-UX, IBM AIX, Sun Solaris and SunOS, Digital UNIX, Ultrix, SGI Irix, SCO UNIX, ConvexOS and Cray UNICOS. Support for Windows and Windows NT is planned. Contact Platform Computing, 28 Green St., Newbury, MA 01951; (508) 463-9165.

Circle 400 on reader card

Software Research Inc. Announces CAPBAK/X 5.1

Software Research Inc. announced the release of CAPBAK/X 5.1 which offers ObjectMode testing in addition to TrueTime and Character Recognition Modes, making it the only capture/playback tool on the market which offers triple-mode testing in one seamlessly integrated tool.

CAPBAK/X uses a new C language interpreter which allows test recordings to be expressed entirely in a proper

subset of C. Tests recorded by CAPBAK/X can be modified as well. Both TrueTime and ObjectMode captures C scripts automatically; it does not require creating new scripts.

CAPBAK/X 5.1 is available on HP 9000 HP-UX, Sun SPARC Solaris, SunOS, Intel x86 and SGI Irix. Price starts at \$4,370 for a single floating license, or as part of the STW/Regression bundle, which includes CAPBAK/X, SMARTS, EXDIFF and

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CAPBAK/ UNIX, which starts at \$7,000 for a single floating license. Contact Software Research, 625 Third St., San Francisco, CA 94107; (415) 957-1441.

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HP Taps SAS For OpenWarehouse

SAS Institute announced that HP selected the SAS System for the highest level of its HP OpenWarehouse program. The SAS System is a software suite of business analysis tools. Its data warehousing capabilities include extraction and transformation tools; data access engines; connectivity software and gateways; data access and reporting tools.

The HP OpenWarehouse is a framework for delivering data warehousing solutions based on HP and third-party components, the user's choice of software components, and HP's consulting and integration services.

Contact SAS Institute Inc., SAS Campus Dr., Cary, NC 27513; (919) 677-8000.

Circle 394 on reader card

Lawson Software Enhances Open Enterprise Solution V2

Lawson Software shipped Version 2 of its Lawson Human Resources System.

Enhancements include improved overtime and retroactive pay calculation features plus the ability to process payroll for employees who are taxed by multiple states or counties, or whose pay is generated from multiple bank accounts. The personnel application now includes a comprehensive job requisitions system for internal and external applicants.

Lawson's Drill Around feature offers flexible, ad hoc access to detailed records, no matter which database they reside in, through a series of pop-up windows and by simply pointing and clicking on displayed fields.

It supports Sybase, Oracle, Informix,

DB2/6000 and DB2/400. It runs on HP 9000, IBM AS/400 and RS/6000, Sun SPARCserver and DEC Alpha AXP. Price for a 10-user system begins at \$25,000 for each payroll, personnel and benefits application.

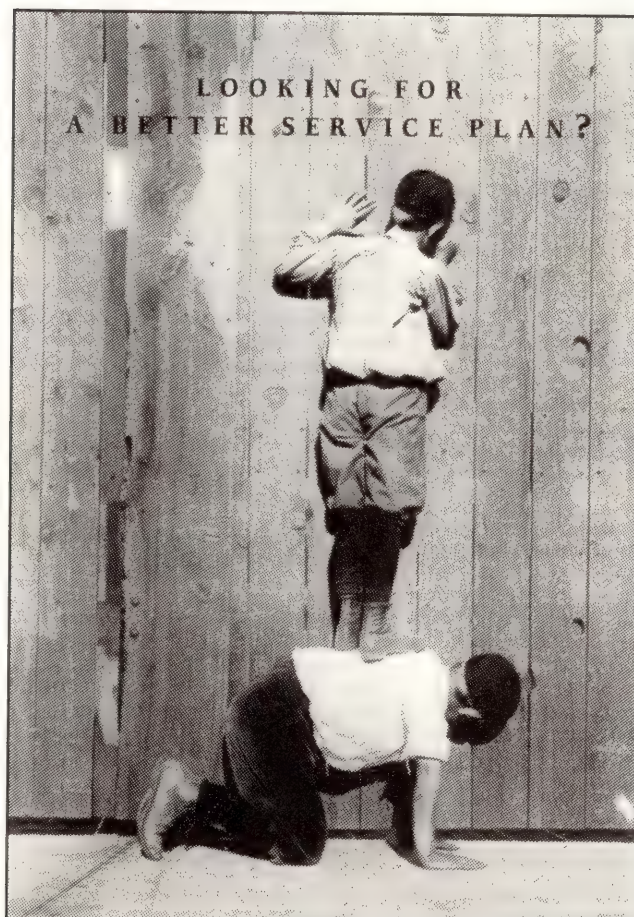
Contact Lawson Software, 1300 Woodward St., Minneapolis, MN 55413; (612) 379-2633.

Circle 390 on reader card

Workstation Solutions Offers Quick Restore V2

Workstation Solutions announced the availability of its Quick Restore V2 network backup and recovery software for SGI systems and HP-UX servers.

Quick Restore V2 is distributed computing technology that enables systems administrators to automatically and efficiently perform backup and restore functions for heterogeneous UNIX computing environments. The product includes industry standard tape format, unattended "lights-out" operation, seamless integration with robotic



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Quick Restore V2 is now available to run on SGI workstations and HP 9000/800 servers, as well as the full line of HP workstations and servers, and systems from Sun, IBM, NCR/ATT, DEC, SCO UNIX and Apollo. Contact Workstation Solutions Inc., One Overlook Dr., Amherst, NH 03031; (603) 880-0080.

Circle 389 on reader card

Pure Software Launches Remote Software Testing

Pure Software announced PureVision, the first product that uses the Internet to automate the remote user testing of software programs. PureVision enables software development organizations to accurately and efficiently track the reliability and usage levels of their software, by providing comprehensive data on how it is being used in real world settings. Before software is fully deployed to users, PureVision is used to measure its readiness by monitoring how it functions. It then collects this information and transports it back to the software supplier over the Internet.

Pure Software's object code insertion (OCI) technology is used within PureVision to collect data on usage patterns and causes of fatal errors in pre-released software. OCI enables PureVision to gain knowledge of the inner workings of a software application while it is running.

Through the Internet, PureVision provides access to its users from any location and networking environment. To provide security, messages can be previewed before being sent to the supplier, and after viewing, they can be deleted. No modification capabilities are provided to preserve integrity.

The standard price for one project with 11 or more remote testing sites is \$75,000, not including maintenance and upgrades.

Contact Pure Software Inc., 1309 S. Mary Ave., Sunnyvale, CA 94087; (408) 720-1600.

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By April 20th, the answers to your technical HP-UX questions will be in San Diego.

Virtually all of your technical HP-UX-related questions can be answered at the InterWorks '96 Conference & Exhibition between April 20th and 25th. Whether you're new to technical HP-UX issues or a highly experienced user, InterWorks '96 is the place to find answers to distributed workstation issues.

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HARDWARE

Kentek Debuts K31 Printer

Kentek Information Systems Inc. announced their latest addition to the K-Series product family, the K31.

Highlights include: flexible controller options with Kentek's RIGS Controller Architecture — RIGS I (standard), 20 MHz IDT 3051 RISC

microprocessor with 8 MB RAM (12 MB in duplex models and expandable to 64 MB), and RIGS II, 50 MHz IDT 3081 RISC microprocessor with 16 MB RAM, expandable to 64 MB; 30 images per minute in simplex or optional duplex mode; heavy-duty 300,000 pages per month duty cycle; lower total cost of printing than desktop printers and other midrange printers with new XL Extended Life opera-

tor-replaceable consumable supplies; standard high-capacity internal hard drive for storage of fonts, logos, forms and signatures. to reduce downloading time; and supports printer emulations, printer description languages and data streams like PCL 5e (HP 4Si compatible), PostScript Level 2 and CCITT G3/G4 compression. Prices start at \$15,995.

Contact Kentek Information Systems Inc., 2945 Wilderness Place, Boulder, CO 80301; (303) 440-5500.

Circle 378 on reader card

TT Systems Maximizes Use of Fax/Data Modems

TT Systems Corp. announced the MPA-100 Modem Mate, which will allow connection of a laptop fax or data modem to virtually any phone system.

The Modem Mate eliminates the need for costly installations or dedicated phone lines. It is suitable for all analog and digital phone systems. It offers a user-adjustable sensitivity control to allow optimum signal matching between the modem and the telephone.

It records all incoming and outgoing telephone calls automatically when used with a voice activated cassette recorder. It also allows playback of recorded tapes through the telephone.

Price is \$120.

Contact TT Systems, 7 Odell Plaza, Yonkers, NY 10701; (914) 968-2100.

Circle 377 on reader card

Dataproducts Offers Free PostScript Fax/Modem

Dataproducts Corp. announced that it is offering a free PostScript fax/modem with the purchase of a Typhoon 8 laser printer. The combination of PostScript fax/modem and Typhoon 8 laser printer allows faxes to be sent at 1200 dpi resolution when communicating with another PostScript fax/modem.

The PostScript fax/modem includes DOS, Windows and Macintosh utilities that allow faxing from any application. Faxes can be scheduled for delayed transmission or broadcast to multiple destinations stored in the software's phone book database.

PostScript fax/modem is fully compatible with over 20 million CCITT Group 3 fax machines and modems



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installed worlwidel PostScript faxes sent to ordinary fax machines also print with higher quality than ordinary fax transmissions.

The Typhoon 8 with 1200 dpi, 1 tray, 36 MB and parallel, serial and LocalTalk connections lists for \$5,199. Other configurations are available including 600 dpi resolution starting at \$2,699.

Contact Dataproducts Corp., 6219 DeSoto Ave., Woodland Hills, CA 91367; 1 (800) 980-0374.

Circle 374 on reader card

Vivid Image Widens Printing

Vivid Image Co. introduced the ImageBox, a high speed color printer that offers wide format printer users quality color output using closed-loop calibration techniques and a 300 percent faster speed. ImageBox is a PostScript-compatible external unit that is designed around Digital Equipment Corp.'s Alpha microprocessor.

ImageBox is a 14 pound stand alone controller unit that provides the link between a PC and a printer engine, electronically converting what is seen on the screen to what actually prints out. ImageBox controllers work with HP DesignJet, ENCAD NovaJet and CalComp TechJet wide format ink-jet printers.

Other features include auto scale print sizing, auto reprint and touch screen controls. ImageBox controllers support printing on paper, transparency, vinyl and canvas. It can be calibrated to support all ink and media including current standards, graphic art, UV and waterproof inks. Drivers for both Macintosh and Windows applications are included.

The new ImageBox controller will sell for \$8,995.

Contact Vivid Image Co., 2311 W. 205th St., Ste. 103, Torrance, CA 90501; (310) 618-0274.

Circle 372 on reader card

IDT Announces Major Breakthrough

International Discount Telecommunications announced (IDT) it has developed a system which allows people to

use their PC to make international phone calls over the Internet and communicate in real-time with people using regular telephones.

It will allow people using sound equipped PCs to initiate a phone call from their PC, transmit the call over the Internet to a special phone switch which will then route the call over traditional phone lines to a second party using a regular telephone. The special

phone switch will convert the signal from the "packet switch network" Internet environment to the "circuit switch network" telephone environment and vice versa allowing for real-time, uninterrupted communications between the two calling parties.

Contact IDT 294 State St., Hackensack, NJ 07601; (201) 883-7949

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A Light At the Beginning Of The 64-Bit Tunnel?



John R. Logan
VP of the
Aberdeen
Group Inc.

Somewhere in its corporate culture, HP developed a phobia about high-end computing systems. Veteran industry watchers of the early 1980s will remember HP executives disparaging the need for 32-bit computing systems, incorrectly claiming that 16-bit systems could handle all the world's midrange computing needs. At their introduction, even the highly successful 12-way T500/990 systems were openly derided by all too many HP employees as overkill for many applications they encountered.

Yet HP users' demands for computing power continues to increase unabated. Each successful application launch within an enterprise only whets end-users' appetites for faster response times, expanded functionality and even more integrated applications. But the performance grinch at HP have appeared unable or unwilling to provide industry leadership in providing the very high-end computing platforms that many information systems executives desperately need.

Yet an industry-leading light at the beginning of the high-end performance tunnel came during September 1995 when HP announced a strategy — a road map — in the form of Enterprise Parallel Servers (EPS). Between now and the middle of 1996, HP promised to deliver systems that provide what it calls highly parallel processing functionality. HP's EPS will be in the same league as AT&T GIS' Teradata/3600, IBM's SP2, Unisys' Opus, Siemens-Nixdorf's RM 10000 and Cray's 6400 — all of which are marketed as massively parallel processing (MPP) systems.

The objective of all these MPP systems is to harness the power of numerous processors (up to 384 for the HP EPS) in the form of computing nodes (each node has its own CPU, memory and copy of the operating system) to produce greater application performance than can be achieved through symmetric multiprocessing (SMP) technology.

On paper, the HP EPS looks very good — even industry leading. It has three advantages distinguish-

ing it from the competition. First, each of the EPS' computing nodes can be an existing, high-performance SMP system — either a T520 or K420. Most of the competition can only use uniprocessor systems within a node. Second, the very high-speed Fibre Channel switch for moving data among nodes will push the industry's technology envelope. Third, HP claims that new EPS models will be able to use 64-bit PA-8000 processors by mid-1996. IBM, AT&T, Unisys and most other MPP suppliers simply cannot credibly assert that they will have 64-bit processor systems anytime in 1996.

High-performance computing is one of the key challenges facing IS executives that rely on RDBMS to run vital business functions. They need more processing power for decision support and very large database OLTP applications. As a result, leading independent software suppliers Oracle, Informix, Sybase and Red Brick have all announced their support for EPS.

But getting back to that HP fear-of-high-performance thing: Will HP establish support partnerships with additional independent software suppliers to obtain a commitment for over 350 applications to be re-engineered for the EPS such as IBM has done with its SP2? Will HP develop the systems software necessary to make EPS-computing mainstream in 1996? Will HP bring out an HP 3000-MPE/iX version of the EPS?

HP users want to see a vision, transformed from 35-mm carousel presentations to actual running systems. And the current competition is extremely worried that HP has been cured of its high-end phobia and will actually do it right.

It is encouraging to see that HP is finally recognizing that IS executives who value HP as a trusted supplier need a high-end performance growth path. Maybe the light at the other end of the tunnel is the industry's highest performing computing systems. — *John R. Logan is vice president of the Aberdeen Group Inc. (Boston, Mass.), and a member of HP Professional's*

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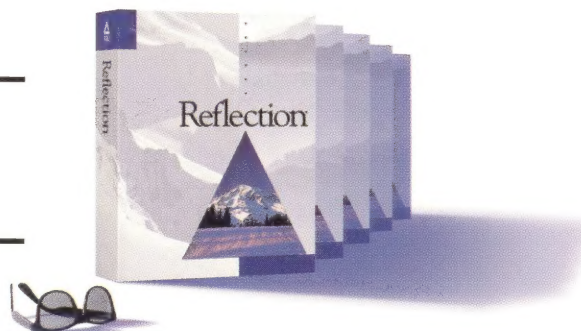
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